

REMARKS

The Examiner is respectfully requested to reconsider and withdraw the rejection of claims 53 and 54 under 35 U.S.C. 103(a) as being anticipated by U.S. 4,634,515 in view of U.S. 6,444,118. The present invention, as claimed in claims 53 and 54, claims a cracked-gasoline or diesel fuel that is patentably distinct from what is disclosed in the '515 patent. Page 24, lines 13-19 of the present invention teach that the sulfur of the resultant hydrocarbon containing fluid is preferably less than 80-ppm sulfur by weight. Further, page 28, line 17 - page 29, line 4 teaches that the addition of hydrogen, as claimed in claims 51-55 of the present invention, interferes with any possible chemical or physical reacting of the olefinic and aromatic compounds. Thus, the addition of hydrogen inhibits the decrease, or increase, in olefinic and aromatic compounds.

The '118 reference discloses the removal of sulfur compounds from naphtha by the use of hydrodesulfurization (HDS) (*see* col. 1, lines 53-61). The instant application teaches a completely different process involving contacting a hydrocarbon-containing fluid stream with a sorbent composition to form a desulfurized fluid stream and a sulfurized sorbent. The sulfurized sorbent is then regenerated (*see* Claim 34). It is not obvious to apply a hydrodesulfurization reference to the instant application. Further, since the '515 reference and the instant application teaches a sulfur being chemically adsorbed (*see* col. 3, lines 52-54) and the '118 references teaches a HDS process, these two references are not combinable

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since they are non-analogous, nor is the '118 reference analogous to the instant application.

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of Applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 24 USPQ 2d 1443, 1445 (Fed. Cir. 1992). The '118 reference is not reasonably pertinent to the instant application since it pertains to HDS.

The Examiner is respectfully requested to reconsider and withdraw the rejections of claims 1-17 under 35 U.S.C. 103(a) as being obvious over U.S. 5,726,117 in view of U.S. 4,634,515. The Examiner points to Example 1 of the '117 patent as disclosing an allegedly similar sorbent system which has been steam treated. However, as the Examiner notes the '117 patent is primarily directed to removing hydrogen sulfide. The Examiner points to various citations in the '515 patent, which also deal with hydrogen sulfide removal which state that nickel is in a reduced or metallic state. Applicant respectfully suggests that the '117 and '515 patents either alone, or in combination, if properly combinable, do not disclose or suggest the invention as presently claimed.

As the Examiner has correctly pointed out, the '117 patent is directed to removal of hydrogen sulfide with a catalyst, or sorbent, system that uses a zinc oxide and nickel oxide supported on the alumina. Further, as the Examiner has noted the present invention, in all claims, requires that the promoter be a reduced valence. The '515 patent teaches nickel adsorbents with a higher fraction of the total nickel

present a reduced or metallic state, column 7, lines 10-12, but does not disclose or suggest any steam treatment. Thus, neither patent, alone, discloses the presently claimed invention. Further, there is no teaching to properly combine the two patents. Neither patent, alone nor in combination teach that the sorbent or adsorbent can be regenerated and have an increased attrition resistance.

Advantages of the presently claimed invention, in addition to being a regenerable sorbent, include a sorbent composition with a higher attrition resistance. The steam treatment, in combination with the reduced valence promoter, as claimed in all claims, provides a novel sorbent composition.

The Examiner is respectfully requested to reconsider and withdraw the rejection of claims 18-33 under 35 U.S.C. 103(a) as being unpatentable over U.S. 5,726,117 in view of U.S. 5,634,515. As the Examiner points out, one difference between the presently claimed invention and the '117 patent is the formation of zinc silicate and/or zinc aluminate. Additionally, the reduction step, as claimed in all claims of the present invention, is a patentable improvement over the '117 patent.

It appears to Applicant that the Examiner is using hindsight to apply the '117 and '515 patents to the presently claimed invention. The Examiner argues that one of ordinary skill in the art would modify the process for making the sorbent in the '117 patent by adding the reducing step of the '515 patent. As the Examiner notes, the art of catalysis is unpredictable. Thus, the use of steam treatment or addition of water to improve the attrition resistance is not an obvious variant when dealing with a metal that is either in a substantially reduced or metallic state as compared to metal oxide.

The Examiner is respectfully requested to reconsider and withdraw the rejection of claims 34-54 under 35 U.S.C. 103(a) as being unpatentable over U.S. 4,634,515 in view of U.S. 5,726,117. Again, the Examiner alleges that Examples 3 and 4 of the '515 patent are an obvious variation of the present invention. However, as the Examiner notes, the presently claimed invention requires the use of a sorbent having steam treated support and the '515 patent does not disclose or suggest use of a steam treated support. Even though the '117 patent discloses steam treatment, the '117 patent does not disclose or suggest reduction of a promoter in order to provide a regenerable sorbent, wherein the sorbent not only removes hydrogen sulfide but *numerous other sulfur compounds*, as taught on page 26, line 5-line 19.

Response to "Response to Arguments"

Regarding claims 53 and 54, Applicants point out that the '515 and '118 references teach non-analogous processes and, therefore, there is no motivation to combine them.

Regarding steam treatment, Applicants point out that the '117 patent discloses steam treatment and have never suggested otherwise. Applicants, however, have pointed out and point out, once again, that the '515 patent does not disclose or suggest any steam treatment.

Regarding regeneration and attrition resistance, Applicants continue to argue that advantages of the presently claimed invention include a regenerable sorbent with higher attrition resistance.

Regarding the formation of zinc silicate, Applicants point out that the inventive composition is used to remove "sulfur" which includes, but is not limited to,

carbonyl sulfide, carbon disulfide, mercaptans, organic sulfides, organic disulfides, thiophene, substituted thiophenes, organic thiosulfides, organic tetrasulfides, benzothiophene, alkyl thiophenes, alkyl benzofluorophenes, and alkyl dibenzothiophenes in addition to hydrogen sulfide (*see* instant application, p. 26). If components are effective for removing hydrogen sulfide, it is not automatically obvious that they would be just as effective for removing all of the above-listed components as well, since some sulfur-containing compounds are more difficult to remove than others. The intended purpose of '117 is to remove hydrogen sulfide from fluid streams. This reference cannot apply to the instant application because the intended purpose is to remove many other types of sulfur compounds.

Regarding hindsight, Applicants continue to argue that the art of catalysis is unpredictable and, therefore, the use of steam treatment or addition of water to improve the attrition resistance is not an obvious variant when dealing with a metal that is either in a substantially reduced or metallic state as compared to metal oxide.

In regards to part (f) of the response, the '117 reference discloses that the metal/metal containing compound is converted to a metal oxide upon calcination (*see* col. 3, lines 54-57). The '117 reference discloses steaming the sorbent composition (*see* col. Col. 4, lines 29-30). Applicants respectfully argue that the sorbent subjected to steam treatment in '117 comprises a metal oxide since it has already gone through the calcination process.

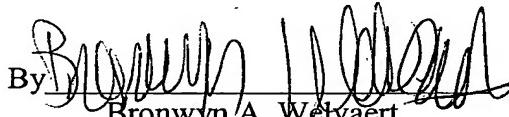
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Regarding part (g), Applicants argue that the sorbent composition in '117 is used for the removal of hydrogen sulfide, and therefore, not combinable with '515 since they teach non-analogous processes.

In view of the foregoing remarks and amendments, reconsideration and allowance of all claims are respectfully requested.

Respectfully submitted,

RICHMOND, HITCHCOCK,
FISH & DOLLAR

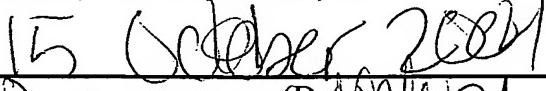
By 
Bronwyn A. Welvaert
Registration No. 52,350

BAW/adh

RICHMOND, HITCHCOCK
FISH & DOLLAR
P.O. Box 2443
Bartlesville, Oklahoma 74005
918-661-0652

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Bronwyn A. Welvaert